

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1. (currently amended) An image pickup device comprising:
 - an image pickup unit including a lens and an image sensor;[[,]] [[and]]
 - a control unit for processing [[the]] an image picked up by the image pickup unit and storing [[the]] a processed image in one of an internal memory and [[or]] a predetermined storage medium, the control unit comprising:
~~wherein the control unit includes~~
 - a face image extraction part for extracting [[the]] a face image contained in the image picked up by the image pickup unit; [[,]]
 - an inference part for executing [[the]] a process of inferring [[the]] attributes of a person constituting an object based on [[the]] feature amounts in an image area including the face image extracted; [[,]]
 - a parameter selecting part for selecting a set of parameters from a table based on the attributes of a person inferred by the inference part, wherein the table stores a plurality of sets of parameters that are respectively optimized based on each attribute of a person, and is stored in the one of an internal memory and a predetermined storage medium;
 - an image pickup conditions adjusting part for adjusting [[the]] image pickup conditions ~~for the image pickup unit~~ based on the selected parameters by the parameter selecting part in one of an internal memory and a predetermined storage medium~~the result of inference in the inference part;~~ [[,]] and
 - an information processing part for storing in selected one of the memory and the storage medium the image obtained under the image pickup conditions adjusted by the image pickup conditions adjusting part.

2. (original) The image pickup device according to claim 1, wherein the inference part includes an inference part for executing the inference of at least one of the race, age and sex as the attributes.
3. (currently amended) The image pickup device according to claim 1, wherein the information processing part includes a part for producing ~~[[the]]~~ a link information containing ~~[[the]]~~ a position of the face image extracted by the face image extraction part and the inference information obtained by the inference process executed by the inference part, and wherein the link information is stored in selected one of the memory and the storage medium together with the image picked up by the image pickup unit.
4. (currently amended) The image pickup device according to claim 1, further comprising a distance recognition part for recognizing the distance to an object, wherein the face image extraction part includes a part for specifying ~~[[the]]~~ a size of the face image to be extracted, based on the result of recognition by the distance recognition part.
5. (currently amended) The image pickup device according to claim 1, wherein the control unit includes ~~[[the]]~~ a focal length adjusting part for adjusting the focal length of a lens of the image pickup unit in accordance with the result of extraction by the face image extraction part.
6. (currently amended) The image pickup device according to claim 1, further comprising a first operating unit for designating ~~[[the]]~~ a range of extracting a face image, wherein the face image extraction part includes a part for limiting the face image extraction area in the image picked up by the image pickup unit in accordance with the designating operation of the first operating unit.
7. (currently amended) The image pickup device according to claim 1, further comprising a ~~second~~ first operating unit for designating ~~[[the]]~~ a deletion of the result of extracting a predetermined part of the face image extracted, wherein

the face image extraction part includes a part for updating the result of extracting the face image in accordance with the designating operation of the ~~second~~ first operating unit.

8. (currently amended) The image pickup device according to claim 1, further comprising a ~~third~~ first operating unit for performing ~~[[the]]~~ a operation of correcting the inference information obtained by the inference process of the inference part, wherein

the information processing part includes a part for correcting the inference information in accordance with the correcting operation of the ~~third~~ first operating unit.

9. (currently amended) The image pickup device according to claim 1, further comprising a ~~fourth~~ first operating unit for correcting the image pickup conditions adjusted by the image pickup conditions adjusting part, wherein

the image pickup conditions adjusting part includes a part for readjusting the image pickup conditions in accordance with the correcting operation of the ~~fourth~~ first operating unit.

10. (currently amended) The image pickup device according to claim 1, wherein the information processing part includes a part for determining ~~[[the]]~~ a direction of the face of an object in the image based on the result of extraction of the image stored in selected one of the memory and the storage medium by the face image extraction part, and a part for rotating the image in such a manner that the face direction conforms with a predetermined reference direction in the case where the determined face direction is different from the reference direction.

11. (original) The image pickup device according to claim 1, further comprising a feature amount storage part for storing the feature amount of the face image already extracted, wherein

the face image extraction part includes a specified image extraction part for extracting an image area including the feature amount of the specified face image stored in the feature amount storage part from the image picked up by the image pickup unit.

12. (original) The image pickup device according to claim 1, further comprising an object storage part for storing the feature amount of the face image of a specified object, wherein

the information processing part compares the feature amount of the face image extracted by the face image extraction part with the feature amount stored in the object storage part, so that in the case where the comparing process shows that the extracted face image is that of the specified object, the link information containing the inference information obtained by the inference process of the inference part and the information for identifying the specified object is produced and stored in selected one of the memory and the storage medium together with the image picked up by the image pickup unit.

13. (currently amended) An image pickup device comprising:

an image pickup unit including a lens and an image sensor; [[,]] [[and]]

a control unit for processing [[the]] an image picked up by the image pickup unit and storing [[the]] a processed image in selected one of an internal memory and a predetermined storage medium, the control unit comprising:

~~wherein the control unit includes~~

a registration part for holding the feature amount of [[the]] a face image of each of a predetermined number of objects and the information required for adjusting the optimum image pickup conditions in correspondence with [[the]] identification information unique to the object; [[,]]

a face image extraction part for extracting [[the]] a face image contained in the image picked up by the image pickup unit; [[,]]

an inference part for inferring ~~the object~~ attributes of a person by comparing the feature amount of the face image extracted by the face image extraction part with the information registered in the registration part; [[,]]

a parameter selecting part for selecting a set of parameters from a table based on the attributes of a person inferred by the inference part, wherein the table stores a plurality of sets of parameters that are respectively optimized based on each attribute of a person, and is

stored in the one of an internal memory and a predetermined storage medium;

an image pickup conditions adjusting part for adjusting the image pickup conditions for the image pickup based on the selected parameters by the parameter selecting part in one of an internal memory and a predetermined storage medium—unit using the registered information of the object estimated by the inference part; [[,]] and an information processing part for storing in selected one of the memory and the storage medium the image obtained under the image pickup conditions adjusted by the image pickup conditions adjusting part.

14. (currently amended) The image pickup device according to claim 13,

wherein the control unit includes a part for receiving the input of the information required for adjusting the optimum image pickup conditions and the identification information of the object in response to ~~[[the]]~~ an image pickup operation of a predetermined object for registration in the registration part, and storing the input information in the registration part together with the face image of the object.

15. (currently amended) The image pickup device according to claim 13,

wherein the information processing part includes a part for producing ~~[[the]]~~ a link information containing ~~[[the]]~~ a position of the face image extracted by the face image extraction part and the inference information obtained by the inference process executed by the inference part, and

wherein the link information is stored in selected one of the memory and the storage medium together with the image picked up by the image pickup unit.

16. (currently amended) The image pickup device according to claim 13, further comprising a distance recognition part for recognizing the distance to an object,

wherein the face image extraction part includes a part for specifying ~~[[the]]~~ a size of the face image to be extracted, based on the result of recognition by the distance recognition part.

17. (currently amended) The image pickup device according to claim 13,

wherein the control unit includes a focal length adjusting part for adjusting ~~[[the]]~~ a focal length of the lens of the image pickup unit in accordance with the result of extraction by the face image extraction part.

18. (currently amended) The image pickup device according to claim 13, further comprising a first operating unit for designating ~~[[the]]~~ a range of extraction of the face image,

wherein the face image extraction part includes a part for limiting the face image extraction area in the image picked up by the image pickup unit in accordance with the designating operation of the first operating unit.

19. (currently amended) The image pickup device according to claim 13, further comprising a ~~second~~ first operating unit for designating ~~[[the]]~~ a deletion of the result of extracting a predetermined part of the face image extracted,

wherein the face image extraction part includes a part for updating the result of extracting the face image in accordance with the designating operation of the ~~second~~ first operating unit.

20. (currently amended) The image pickup device according to claim 13, further comprising a ~~third~~ first operating unit for performing ~~[[the]]~~ a operation of correcting the inference information acquired by the inference process of the inference part,

wherein the information processing part includes a part for correcting the inference information in accordance with the correcting operation of the ~~third~~ first operating unit.

21. (currently amended) The image pickup device according to claim 13, further comprising a ~~fourth~~ first operating unit for correcting the image pickup conditions adjusted by the image pickup conditions adjusting part,

wherein the image pickup conditions adjusting part includes a part for readjusting the image pickup conditions in accordance with the correcting operation of the ~~fourth~~ first operating unit.

22. (currently amended) The image pickup device according to claim 13,

wherein the information processing part includes a part for determining the direction of the object face in the image stored in selected one of the memory and the storage medium based on the result of extraction by the face image extraction part, and a part for rotating the image in such a manner that ~~[[the]]~~ a direction of the face conforms with a predetermined reference direction in the case where the determined direction of the face is different from the predetermined reference direction.

23. (currently amended) A program stored on computer-readable medium to be executed by an image pickup device comprising an image pickup unit including a lens and an image sensor, and a control unit for processing ~~[[the]]~~ an image picked up by the image pickup unit and storing ~~[[the]]~~ a processed image in selected one of an internal memory and a predetermined storage medium, the program for causing the image pickup device to perform steps comprising:

a step of extracting ~~[[the]]~~ a face image contained in the image picked up by the image pickup unit;

a step of inferring ~~[[the]]~~ attributes of a person constituting an object based on ~~[[the]]~~ a feature amount in an image area including the face image upon extraction of the face image;

a step of selecting a set of parameters from a table based on the attributes of a person inferred in the inferring step, wherein the table stores a plurality of sets of parameters that are respectively optimized based on each attribute of a person, and is stored in the one of an internal memory and a predetermined storage medium;

a step of adjusting [[the]] image pickup conditions for the image pickup unit based on the selected parameters in the selecting step ~~the result of inference in the inference step~~; and

an information processing step of storing in selected one of the memory and the storage medium the image acquired under the image pickup conditions adjusted by the image pickup conditions adjusting step.

24. (currently amended) A program stored on computer-readable medium to be executed by an image pickup device comprising an image pickup unit including a lens and an image sensor, [[and]] a control unit for processing [[the]] an image picked up by the image pickup unit and storing [[the]] a processed image in selected one of an internal memory and a predetermined storage medium, the program for causing the image pickup device to perform steps comprising the steps of:

registering the registration information on the feature amount of [[the]] a face image of each of a predetermined number of objects and the information required for adjusting the optimum image pickup conditions in correspondence with [[the]] identification information unique to the object;

extracting [[the]] a face image contained in the image picked up by the image pickup unit;

inferring attributes of a person ~~estimating the object~~ by comparing the registration information with the feature amount of the face image extracted in the face image extraction step;

selecting a set of parameters from a table based on the attributes of a person inferred in the inferring step, wherein the table stores a plurality of sets of parameters that are respectively optimized based on each attribute of a person, and is stored in the one of an internal memory and a predetermined storage medium;

adjusting the image pickup conditions for the image pickup device based on the selected parameters in the selecting step ~~using the registration information of the object estimated in the estimation step~~; and

storing in selected one of the memory and the storage medium the image acquired under the image pickup conditions adjusted in the image pickup conditions adjusting step.

25. (currently amended) A method to be executed by an image pickup device comprising an image pickup unit including a lens and an image sensor, [[and]] a control unit for processing [[the]] an image picked up by the image pickup unit and storing [[the]] a processed image in selected one of an internal memory and a predetermined storage medium, the method comprising:

- a step of extracting [[the]] a face image contained in the image picked up by the image pickup unit;

- a step of inferring [[the]] attributes of a person constituting an object based on [[the]] a feature amount in an image area including the face image upon extraction of the face image;

- a step of selecting a set of parameters from a table based on the attributes of a person inferred in the inferring step, wherein the table stores a plurality of sets of parameters that are respectively optimized based on each attribute of a person, and is stored in the one of an internal memory and a predetermined storage medium;

- a step of adjusting [[the]] image pickup conditions for the image pickup unit based on based on the selected parameters in the selecting step ~~the result of inference in the inference step~~; and

- an information processing step of storing in selected one of the memory and the storage medium the image acquired under the image pickup conditions adjusted by the image pickup conditions adjusting step.

26. (currently amended) A method to be executed by an image pickup device comprising an image pickup unit including a lens and an image sensor, [[and]] a control unit for processing [[the]] an image picked up by the image pickup unit and storing [[the]] a processed image in selected one of an internal memory and a predetermined storage medium, the method comprising the steps of:

registering the registration information on the feature amount of ~~[[the]]~~ a face image of each of a predetermined number of objects and the information required for adjusting the optimum image pickup conditions in correspondence with ~~[[the]]~~ identification information unique to the object;

extracting ~~[[the]]~~ a face image contained in the image picked up by the image pickup unit;

inferring attributes of a person ~~estimating the object~~ by comparing the feature amount of the face image extracted in the face image extraction step with the registration information;

selecting a set of parameters from a table based on the attributes of a person inferred in the inferring step, wherein the table stores a plurality of sets of parameters that are respectively optimized based on each attribute of a person, and is stored in the one of an internal memory and a predetermined storage medium;

adjusting the image pickup conditions for the image pickup unit based on the selected parameters in the selecting step ~~using the registration information on the object estimated by the estimation step~~; and

storing in selected one of the memory and the storage medium the image acquired under the image pickup conditions adjusted in the image pickup conditions adjusting step.